

**Example #4:** A 0.90 kg mass attached to a cord is whirled in a vertical circle of radius 2.5 m.

- a) Find the tension in the cord at the top of the circle if the speed of the mass is 8.7 m/s.
- b) Find the tension in the cord at the bottom of the circle if the speed is maintained at 8.7 m/s.

a)



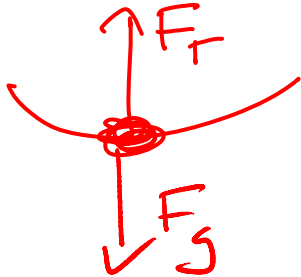
$$F_c = F_g + F_T$$

$$F_T = F_c - F_g$$
$$= \frac{mv^2}{r} - mg$$

$$= .90 \left[ \frac{8.7^2}{2.5} - 9.8 \right]$$

$$F_T = 18 \text{ N}$$

b)



$$F_c = F_T - F_g$$

$$F_T = F_c + F_g$$

$$= .90 \left[ \frac{8.7^2}{2.5} + 9.8 \right]$$

$$F_T = 36 \text{ N}$$